

CLAIMS

1. Optical amplifying materials consisting of a support and having coated thereon an amplifying layer and a luminescence layer on top of this layer, characterized in that the amplifying layer contains nanocrystalline, nanoporous aluminium oxide and/or aluminium oxide/hydroxide.
2. Optical amplifying materials according to claim 1, characterized in that said amplifying layer contains the nanocrystalline, nanoporous aluminium oxide and/or aluminium oxide/hydroxide in a quantity from 0.1 g/m² to 20 g/m².
3. Optical amplifying materials according to claim 1, characterized in that said amplifying layer contains the nanocrystalline, nanoporous aluminium oxide and/or aluminium oxide/hydroxide in a quantity from 1 g/m² to 10 g/m².
4. Optical amplifying materials according to claims 1 to 3, characterized in that said nanocrystalline, nanoporous aluminium oxide and/or aluminium oxide/hydroxide in the amplifying layer comprises one or more of the elements of the periodic system of the elements with atomic numbers 57 to 71 in an amount of from 0.2 to 2.5 mole percent relative to Al₂O₃.
5. Optical amplifying materials according to claims 1 to 4, characterized in that said amplifying layer contains up to 10 % of a binder relative to the quantity of the nanocrystalline, nanoporous aluminium oxide and/or aluminium oxide/hydroxide.
6. Optical amplifying materials according to claims 1 to 4, characterized in that said amplifying layer contains up to 5 % of a binder relative to the quantity of the nanocrystalline, nanoporous aluminium oxide and/or aluminium oxide/hydroxide.
7. Optical amplifying materials according to claims 5 and 6, characterized in that the binder in the amplifying layer is film-forming.
8. Optical amplifying materials according to claim 7, characterized in that the binder in the amplifying layer is polyvinyl alcohol.
9. Optical amplifying materials according to claims 1 to 8, characterized in that the luminescence layer consists of tris(8-hydroxyquinoline) aluminium.

10. Optical amplifying materials according to claim 9, characterized in that the luminescence layer consists of tris(8-hydroxyquinoline) aluminium of the crystal modification showing green luminescence.
- 5 11. Optical amplifying materials according to claim 10, characterized in that the tris(8-hydroxyquinoline) aluminium in the luminescence layer showing green luminescence is transformed to the crystal modification showing blue luminescence by illumination with daylight at room temperature in the presence of air.
- 10 12. Optical amplifying materials according to claims 1 to 11, characterized in that the support is coated or uncoated paper, plastic film or glass.
- 15 13. Support with an amplifying layer consisting of nanocrystalline, nanoporous aluminium oxide and/or aluminium oxide/hydroxide, optionally comprising one or more of the elements of the periodic system of the elements with atomic numbers 57 to 71 in an amount of from 0.2 to 2.5 mole percent relative to Al_2O_3 , and, optionally, a binder, coated onto the support, as substrate whereon a luminescence layer may be deposited.